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### \*\*\* DIS \*\*\*

DIS is a disassembler written entirely in BASIC so you can modify it to suit your needs. To load it, just LOAD "" or LOAD "DIS". To save it, SAVE "DIS" LINE 1.

CAUTION: do not CLEAR or RUN. DIS uses a very large array, and if you wipe it out you'll have to reload the program.

DIS comes with a companion program called MON (monitor) which can be used to modify contents of memory in a variety of ways. MON may be merged with DIS. MON is discussed on Page 2.

Both programs display at the bottom of the screen the BASIC system variable STACK END, which is the highest location used by BASIC. Machine-code programs to be disassembled or modified can be loaded above STACK END. If both DIS and MON are in the computer at once, STACK END will be much higher than if only one program is in use.

### \*\*\* DIS MENU COMMANDS \*\*\*

QUIT: Stop.

FROM: Allows you to input starting address, as a dec or hex number, thus: 60000 or HEA60 or hEa60.

TO: Allows you to similarly input ending address.

DISASSEMBLE: Begin disassembling. Press SPACE to pause, C to continue, ENTER to quit and return to menu.

NUMERIC DUMP: Begin displaying the contents of a bunch of memory locations on each screen line (8 if hex, 5 if dec).

ASCII DUMP: Begin displaying contents of memory as ASCII characters. Non-ASCII bytes are displayed as a period.

PRINTER: Selects whether output will go to printer.

BASE: Selects whether output will be HEX or DEC.

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NOTE: Because it's written in "pure BASIC", DIS takes up a lot of room in memory and works quite slowly. If you need a really good fast assembler/disassembler, I recommend Hisoft's DEVPAK heartily. Write for more details if desired. DEVPAK is for "serious" machine-code writers or students.

\*\*\* MON \*\*\*

With MON we are looking at (and possibly modifying) 1 or 2 locations at a time: 1 if MODE = BYTE, and 2 if MODE = WORD.

Pressing ENTER causes the current location to be incremented by the value of STEP (normally 1) in BYTE mode, or by 2 in WORD mode.

Pressing SPACE is similar but CURRENT LOCATION is decremented.

The CURRENT LOCATION is the last one on the screen; it is shown in HEX and (in parentheses) DECIMAL.

The CONTENTS of the CURRENT LOCATION are shown in HEX and (in parentheses) in the READ-BASE of your choice, initially 16 (=HEX). If there's room on screen, contents are also shown as an ASCII character.

Thus you may see the contents of memory in any base you like: base 2=BINARY, base 8=OCTAL, base 10=DECIMAL, base 16=HEX.

COMMAND A lets you input a new CURRENT LOCATION in the current base. If it's HEX, you press A, then type a hex number and press ENTER.

Command B lets you input a new BASE.

Command S lets you input a new value for STEP. For example, you may wish to examine every 256th location of a particular file.

Command X switches MODE from BYTE to WORD and vice-versa.

Command W selects WRITE MODE which allows you to MODIFY the contents of the current location and advance to the next one.

-If BYTE mode, the number you type must be between decimal 0 and 255, or HEX 00 and FF.

-If WORD mode, the number must be between 0 and 65535, or HEX 0000 and FFFF.

-The number you type must be in the selected base.

-Input "E" to exit WRITE mode.

-If you are in BYTE mode, you may input a STRING OF ASCII characters terminated by the character "c" or "C". The terminal "c" tells MON to insert the string in memory beginning at the current location. The "c" terminator won't go into memory.

Command L initiates a listing, as though you were holding the ENTER key down. Press any key to stop listing.

-You will be asked "LIST TO:" so input a DECIMAL number for the location at which you want the listing to halt. If you just press ENTER, an ending address of 65535 will be assumed.

Command N goes to the NUMBER CONVERTER, which lets you convert a number of any base to another base. See below. Just press ENTER to exit the number converter.

Command Z lets you copy the screen to 2040 printer.

Command V clears the screen.

Command M displays the menu.

Command Q stops. You may run unless DIS is also in computer, in which case GO TO 8000 to start MON.

A word about WORD MODE: as you may know, big numbers in the range 0-65535 (hex 0000-FFFF) are stored in the computer as two successive bytes, the first being the low-order byte and the second being the high-order byte. Such big numbers are commonly used to hold addresses. Many SYSTEM VARIABLES are such big numbers. In WORD MODE, two bytes at a time are displayed as a big number, and two bytes at a time are modified in WRITE MODE. Thus you could use MON to enter a table of addresses into memory, or modify an existing table, using WORD MODE. It's also useful for studying the BASIC SYSTEM VARIABLES.

It would be wise to make a screen copy of the menu to have handy; menu commands can be used even when the menu itself has scrolled off the screen.

### \*\*\* THE NUMBER CONVERTER \*\*\*

You will be asked for 3 inputs:

NUMBER: You input the number you wish to convert.

BASE: You input the base of the number you wish to convert.

TO BASE: You input the base to which you want the number converted.

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### \*\*\* EXAMPLE: YOU WISH TO CONVERT HEX FF37 to OCTAL. \*\*\*

NUMBER: input FF37.

BASE: input 16. This says: FF37 is a HEX number.

TO BASE: input 8. This says: convert it to OCTAL.

To exit the Number Converter, just press ENTER.

\*\*\* END \*\*\*